Lindesnes
IT technical direction

(lin·des·nes)

Release #1
January 9, 2023

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Executive summary

We empower teams to learn and deliver business outcome

We build a strong security culture

We treat data as products: easy to find and utilize to make faster and better decisions

We evolve a resilient architecture, prepared for changes

We automate repetitive tasks and processes

Desired business outcomes

Learning and high performing organization

Future winners are those who have high-performing teams that together learn, relearn, and act on learnings faster than everyone else. Software and data can be used to unlock new opportunities across Equinor, and scale and apply our collective knowledge in ways that people alone cannot.

Resilient business operations

Safe, secure, compliant, sustainable, adaptative and competitive business operations – resilient to cyber threats, technical disasters and market volatility – are our license to operate. Business processes can be streamlined and automated to do more with less.

Faster and better decisions

The ability to make faster and better decisions using trusted data, insights and our knowledge in the right context and at scale will be a key differentiator.

Guiding principles

People

Empowered teams learning and working together in making an impact for our business

1. Build an open and high-trust culture that supports learning and collaboration [1] [2]
2. Empower teams to deliver business outcome [1] [2]
3. Optimize team interactions for fast flow aligned around business capabilities [1] [2]
4. Make solutions collaboratively to act on learning faster than competitors [1]
5. Enable, encourage and support citizen development and analytics [1] [2] [3]

Product delivery

Deliver secure and compliant products loved by the users quickly, securely and sustainably

6. Treat security as a first-class citizen [1] [2]
7. Fund teams based on desired business outcome [1] [2]
8. Use platforms as drivers to reduce teams' cognitive load [1] [2]
9. Deliver continuously [1] [2]
10. Treat your data as products [3]
11. Automate operation of solutions [2]
12. Automate governance compliance [2]

Architecture

Resilient architecture giving you both speed, stability and faster insights turned into actions

13. Make solutions loosely coupled [1] [2]
14. Make solutions interoperable [2] [3]
15. Make solutions portable between edge and cloud [2] [3]
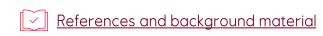16. Move towards wireless communication [2]

PEOPLE

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1.   Build an open and high-trust culture that supports learning and collaboration

What are we trying to achieve and why?

What: We want to achieve an open and high-trust culture enabling learning, experimentation, information flow and collaboration – where people also have fun. Culture changes through time. By changing how we work we also change culture.

Why: People and culture can make any direction make or break. According to research, a high-trust culture emphasizing information flow results in higher performance in technology organizations.

A high-trust workplace culture also helps the organization to attract and keep their talents.

[References and background material](#)

2. Empower teams to deliver business outcome

What are we trying to achieve and why?

What: We want to achieve <u>products loved by the users while still viable for the business</u>.

Empowered teams are cross-functional where our business and technology work together on achieving desired business outcomes. The team, with the necessary skills, is trusted to decide the best ways to achieve them.

The business outcomes are the results the users and the business want or need to achieve. Empowered teams feel a sense of ownership and empathy to business outcomes and user needs, rather than just output (backlog items, features).

Why: There is no secret how the _best_ companies create and implement solutions. Empowered cross-functional teams generate consistently better results, also in terms of innovation and outcome.

It is the path to better value - sooner, safer and happier.

<u>References and background material</u>

3.   Optimize team interactions for fast flow aligned around business capabilities

What are we trying to achieve and why?

What: We want to achieve fast and efficient flow of safe value by optimizing team interactions and team's cognitive load, and by aligning teams around business capabilities.

Why: Fast and efficient flow enables faster feedback, quicker learning, reduced risk, and the ability to pivot sooner to maximize outcome.

Teams can adapt faster, and the team's cognitive load is on a sustainable level making people happier, more productive and less stressful.

Organizing teams around business capabilities will lead to a portfolio architecture that has a stronger correlation to what the business does, with cleaner interfaces (Conway's law).
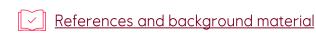
References and background material

4. Make solutions collaboratively to act on learning faster than competitors

What are we trying to achieve and why?

What: We want to achieve faster feedback loops and learning for Equinor gained from people, regardless of company, solving business problems through software and data. This is a great way to learn and Equinor must be able to apply and scale that learning elsewhere.

Why: In the long run, the only sustainable source of competitive edge is Equinor's ability to learn faster than our competitors. You learn from direct experiences. You cannot learn to ride a bike by reading a book or watching a film. You need to try, fail, pivot, and try again.

The better we are at solving business problems through software and data, the better we are in collaborations and partnerships where we integrate solutions.

References and background material

5. Enable, encourage and support citizen development and analytics

What are we trying to achieve and why?

What: We want to achieve an environment where people are empowered to realize their own ideas using secure and supported citizen development and analytics platforms.

Citizen developers are business users testing ideas, creating solutions or analyzing data using fit-for-purpose platforms. Citizen development and analytics will not replace professional software development as a craft, they co-exist and are used for different needs.

Why: Citizen development brings capabilities to the business that are well-needed in the future. The ability to quickly automate parts of one's daily work, use software to test ideas and solve business problems, will be key for future success of any company.

The younger generations will have software development and technology skills independent of education and discipline. They will expect to use this at work to automate and quickly resolve issues at hand.

References and background material

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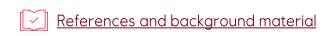# 6.   Treat security as a first-class citizen

What are we trying to achieve and why?

What: We want to achieve a culture and practice where security is treated as a first-class citizen built into the solution delivery lifecycle, including the supply chain, instead of making it a separate phase at the end.

Security must be a mindset and something we continuously work on, including disaster recovery and how we respond if a disaster occurs.

Why: Treating security as a first-class citizen is a prerequisite to our cyber-resilience and ability to be a secure and trusted energy provider.

By building security into the team's daily work, as opposed to retrofitting security concerns at the end, teams spend significantly less time addressing security issues, according to research in Accelerate.

References and background material

7. Fund teams based on desired business outcome

What are we trying to achieve and why?

What: We want to achieve an adaptable funding model increasing business agility by having the ability to pivot and respond to fast-changing stakeholder demands when needed.

Teams are funded iteratively based on progress towards prioritized business outcome, rather than funding pre-defined work within a project timeframe.

Why: By funding teams based on prioritized business outcomes, teams can respond more quickly to demands, compared to a project-oriented funding model. The rolling team funding significantly reduces delivery lead time as the initiation, prioritization and funding is handled continuously.

[References and background material](#)

8.   Use platforms as drivers to reduce teams' cognitive load

What are we trying to achieve and why?

What: We want to achieve reduced cognitive load in teams through platforms built and managed as products. Platforms in this context are helping teams with implementation, development and/or operation of their solutions, and enable them to quickly do the right things in a secure and compliant manner.

Since the platform is treated as a product, there is a great focus on the user experience and in making the platform compelling and easy to use.

Why: When the team's responsibility is not matched to the cognitive load the team can handle, the team cannot effectively evolve their solutions safely and sustainably.

Platforms without a good and fit-for-purpose user experience increases the team's cognitive load. This creates bottlenecks and negatively impacts speed, security and adaptability.

Platforms create alignment and enable reusability, simplification and standardization.

References and background material

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9.   Deliver continuously

What are we trying to achieve and why?

What: We want to achieve value of all kinds – features, configuration changes, bug fixes, experiments – to be deployed, on demand, into production, or into the hands of the users, safely, quickly, predictable and sustainably.

Why: The research in Accelerate shows that teams that did well at continuous delivery also achieve a strong identification with the organization they work for.

In addition, they achieve higher levels of delivery performance, lower change fail rates, and an improved performance and learning-oriented culture.

You simply get better at things you do often.

References and background material

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10. Treat your data as products

What are we trying to achieve and why?

What: We want to achieve a culture and practice where data is treated as a product loved by the users while still viable for the business.

Users can easily and quickly find, access, understand, trust and use data products to make faster and better decisions in a secure and compliant manner.

The data products, including software code, data pipelines, storage and interfaces, are built, managed, and served by empowered data teams in the business domain.

Why: Treating data as products makes it easier for people to make faster and better decisions.

The time from finding data to generating value from data is reduced – at scale. According to McKinsey, companies treating data as products can reduce time needed to implement and use them for new use cases by up to 90%.
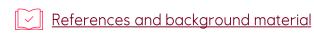
References and background material

11. Automate operation of solutions

What are we trying to achieve and why?

What: We want to achieve the ability to do more with less by moving towards automated and autonomous operation of solutions using artificial intelligence (AI).

The solution will figure out when an incident has occurred, show you all information needed to resolve it and, in the future, perform the fix autonomously (AIOps).

Why: We enable a more efficient workday for teams and users of solutions, and it gives teams more time on improvements, optimizations, learning and proactive handling of technical debt.

References and background material

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12. Automate governance compliance

What are we trying to achieve and why?

What: We want to achieve speed and quality in governance compliance.

Ensuring governance compliance is a license to operate, but it is manual, complex and time consuming.

Why: With changes delivered continuously with high degree of automation, no manual governance model can keep up, which leads to workarounds, which leads to vulnerabilities and non-compliance.

Automation of governance compliance is more robust, leads to reduced risk of non-compliance, and increased transparency and trust.

References and background material

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13. Make solutions loosely coupled

What are we trying to achieve and why?

What: We want to achieve teams that can make changes on demand without permissions, without having to coordinate and without creating significant work for other teams.

This is enabled by a loosely coupled architecture, an architectural style where solutions and components are built and managed independently from each other.

Why: Loosely coupled architecture has to do with our ability to make changes.

We gain a better position to perform strongly across stability, reliability and throughput.

Loosely coupled architecture also makes it easy to add more people, according to Accelerate, since teams work more independently.
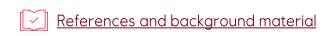
References and background material

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14. Make solutions interoperable

What are we trying to achieve and why?

What: We want to achieve solutions seamlessly exchanging information and knowledge (i.e., interoperability) across business capabilities in the value chain.

Why: Solutions not able to work seamlessly together leads to inefficient and error-prone execution of business processes and is an obstacle to unlock new industry collaborations and new ways of working.

The number of solutions and data are increasing significantly, and without a scaling of the workforce needed to manage and monitor them, interoperability and standardization is needed.

[References and background material](#)

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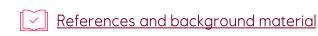# 15. Make solutions portable between edge and cloud

What are we trying to achieve and why?

What: We want to achieve insights turned into action faster by increased portability and flexibility between edge and cloud.

Edge computing is about bringing software and data processing closer to users and where data is produced (e.g., physical devices on wind turbines, wearables or offices) rather than leaving everything in a central datacenter in the cloud. Portability is the ability to use, with low effort, the same software on different platforms and environments.

Why: According to Gartner, 75% of data will by 2025 be generated and processed outside traditional data centers in cloud due to the expansion of Internet of Things (IoT) and more power on embedded devices.

Processing data at edge is relevant for workloads requiring low latency, harsh environments with limited or unstable connection to cloud, security and legal reasons, or for cost savings in workloads with large amounts of data too expensive to transfer, store and process in central cloud.

References and background material

16. Move towards wireless communication

What are we trying to achieve and why?

What: We want to achieve a wireless workplace with improved user experience and operations using wireless technologies working seamlessly together.

Example are advances in 5G/XG, Wi-Fi 6 and Wireless IoT Network Protocols.

Why: Wireless communication enables increased productivity and adaptability.

Most devices today only come with Wi-Fi interface. Wireless enables us to deliver a more secure access to Equinor services and data, in addition to better control and support for IoT devices. We can simplify interactive workflows at Equinor premises.

References and background material (1/3)

Build an open and high-trust culture that supports learning and collaboration

- (Book) Humanocracy, creating organizations as amazing as the people inside them
- (Book) Accelerate – Building and scaling high performing technology organizations
- DevOps culture – Westrum organizational culture
- (Research) Resilience – Continuous renewal of competitive advantages
- Cut me some Slack: The road to continuous learning and improvement, by Morgan Kobeissi

Empower teams to deliver business outcome

- (Book) EMPOWERED, by Marty Cagan and Chris Jones
- Empowered product teams
- (Book) EDGE, value-driven digital transformation
- (Book) Team Topologies – Organizing business and technology teams for fast flow
- The Nature of Product (Marty Cagan)
- Google Oxygen Project

- Google Aristotle Project
- (Book) The Unicorn Project

Organize team interactions for fast flow aligned around business capabilities

- Team Topologies
- (Book) Team Topologies – Organizing business and technology teams for fast flow
- Team Topologies – A New Way of Thinking About Teams
- How to Optimize for Fast Flow Using Alignment and Autonomy: the Journey of a Large Bureaucracy
- Conway's Law: Critical For Efficient Team Design In Tech
- Team Cognitive Load
- Business capability-centric teams

Make solutions collaboratively to act on learning faster than competitors

- (Book) Ask your developer, how to harness the power of software developers and win in the 21st century
- (Book) The Fifth Discipline: The art & practice of the learning organization
- Is the Make/Buy decision a core competence?
- How to optimize for fast flow using alignment and autonomy in a large bureaucracy
- In-house or outsourcing (Norwegian podcast with Torbjørn Larsen, former CIO in NAV)
- IT sourcing strategy Equinor

Enable, encourage and support citizen development and analytics

- Enable citizen development with support from IT
- Best practices for enabling citizen development
- Power Platform in Equinor
- Will Citizen Engineers Build Most Technology Products and Services by 2024?

References and background material (2/3)

Treat security as a first-class citizen

- (Book) Accelerate – Building and scaling high performing technology organizations
- Equinor AppSec
- Increase application security using Zero Trust principles
- The Rugged manifesto
- DevSecOps

Fund teams based on desired business outcome

- Products over projects
- Moving from project funding to product enablement
- (Book) EDGE, value-driven digital transformation
- Evolving the IT funding model
- Funding Model: The Seven Domains of Transformation

Use platforms as drivers to reduce teams' cognitive load

- Team Cognitive Load
- Platform as a Product
- What is platform as a product?
- How internal technology platform creates value at NAV
- How we use "Golden Paths" to solve fragmentation in our software ecosystem
- The Importance of a Golden Path
- (Book) Ask Your Developer: How to Harness the Power of Software Developers and Win in the 21st Century

Deliver continuously

- (Book) Accelerate – Building and scaling high performing technology organizations
- Continuous Delivery

Treat your data as products

- Data Mesh: Get value from data at scale
- Data Mesh Principles and Logical Architecture
- Data as a Product
- A better way to put your data to work
- Data Mesh – Domain ownership of data products
- Data Mesh – Federated computational governance
- Data Mesh – Self-serve data platform
- Data Mesh – Self-serve data platform capabilities

References and background material (3/3)

Automate operation of solutions

- IBM: What is AIOps?
- Splunk: What is AIOps?

Automate governance compliance

- Compliance as Code
- What is Automated Governance?

Make solutions loosely coupled

- (Book) Accelerate – Building and scaling high performing technology organizations
- Loosely Coupled Architecture definition
- The importance of loosely coupled architecture and teams
- Conway's Law: Critical For Efficient Team Design In Tech
- AWS: What is an Event-Driven Architecture?
- Red Hat: What is an Event-Driven Architecture?

Make solutions interoperable

- Konkraft 2018
- World Economic Forum: Digital Transformation Initiative Oil and Gas Industry
- "Data sharing in the industry" – Norwegian government (Norwegian only)
- The Industry IoT Consortium
- Insight article: Energy Industry 4.0 – The future of Equinor
- OSDU interoperability

Make solutions portable between edge and cloud

- Siemens Industrial Edge
- ABB cloud, edge and fog computing
- ABB and Red Hat partner to deliver further scalable digital solutions across industrial edge and hybrid cloud
- Kubernetes on the Edge
- Red Hat: What is edge computing?

Make solutions accessible from Internet

- The Internet – The new corporate network
- Internet First Policy
- Empowering Microsoft employees to work securely anywhere with Internet-first thinking

Use single cloud for infrastructure, selective cloud for platform, and multi cloud for software services

- Navigating Cloud: The key to resilience, in crisis and beyond
- Multi-cloud failover is almost always a terrible idea